R E P O R T R E S U M E S

ED 012 182 JC 670 181

SYSTEMS APPROACH TO LEARNING.

BY- WIENS, JACOB H.

PUB DATE 16 NOV 66

EDRS PRICE MF-$0.09 HC-$1.16 29P.

DESCRIPTORS- *JUNIOR COLLEGES, *SYSTEMS APPROACH, *INSTRUCTIONAL MATERIALS, *AUDIOVISUAL CENTERS, *PROGRAMED INSTRUCTION, EDUCATIONAL FACILITIES, PROGRAM COSTS, PROGRAM PLANNING, EDUCATIONAL EQUIPMENT, AUTOINSTRUCTIONAL AIDS, PROGRAMED MATERIALS, TEACHING METHODS, SAN MATEO

TO PERMIT COMPARATIVE ANALYSIS FOR PURPOSES OF EDUCATIONAL PLANNING AT SAN MATEO, FIVE INSTITUTIONS WITH SYSTEMS PROGRAMS ARE EVALUATED ON THE BASIS OF TRIP NOTES. OAKLAND COMMUNITY COLLEGE HAS BEEN COMPLETELY ORGANIZED AROUND THE VOLUNTARY WORK-STUDY LABORATORY APPROACH TO LEARNING. ORAL ROBERTS UNIVERSITY, OKLAHOMA CHRISTIAN COLLEGE, HENRY FORD COMMUNITY COLLEGE, AND MT. SAN JACINTO COLLEGE HAVE ADAPTED NEW PROGRAMS TO EXISTING FACILITIES AND CURRICULUM. THE INTRODUCTION OF PROGRAMED INSTRUCTIONAL MEDIA HAS BEEN ACCOMPANIED BY THE ADDITION OF AUDIOVISUAL EQUIPMENT AND STUDY CARRELS. (THIS EQUIPMENT IS DESCRIBED AND COMPARED.) LIMITATIONS ON FACILITIES AND BUDGET AT SAN MATEO PRECLUDE THE INTRODUCTION OF CARRELS, BUT MODIFICATION OF THE MT. SAN JACINTO PROGRAM APPEARS FEASIBLE IN TERMS OF TRANSLATION AND COST. STUDENT-FACULTY RATIOS AND FACULTY ORIENTATION TECHNIQUES ARE ALSO IMPORTANT ASPECTS OF PLANNING. AN APPENDIX CONTAINS DESCRIPTIVE MATERIAL ON THE INTRUCTIONAL METHOD USED AT OAKLAND COLLEGE. (AL)

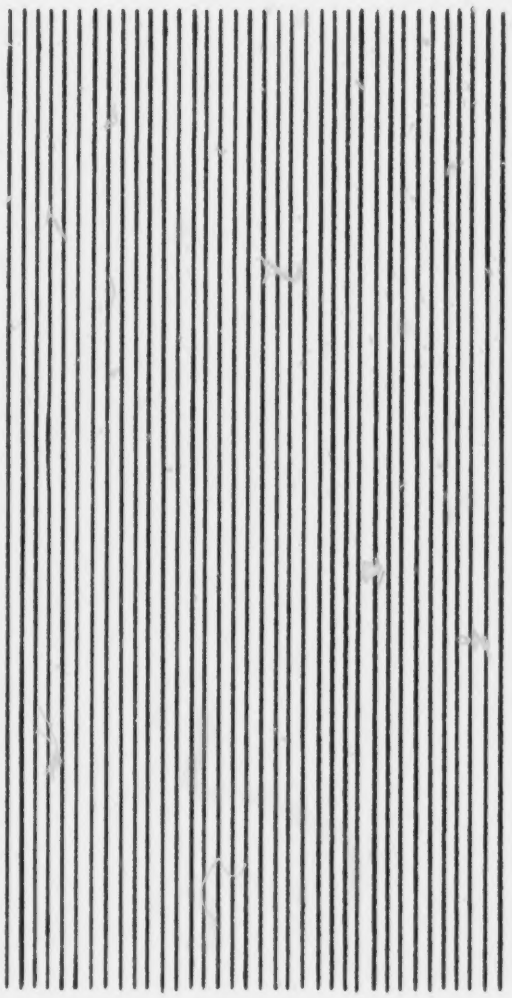
U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

ERIC

ED012182

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

SYSTEMS APPROACH TO LEARNING



UNIVERSITY OF CALIF.
LOS ANGELES

MAR 1 0 1967

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

DESIGNED BY KEN BEDDOW, TECHNICAL ILLUSTRATION

NOVEMBER 16, 1966

JACOB H WIENS
DIRECTOR,
PROGRAM INSTRUCTION

JC 670 181

COLLEGE OF SAN MATEO

November 18, 1966

TO: Mr. William A. Goss,
Acting President and Superintendent

FROM: Dr. Jacob H. Wiens,
Director, Programmed Instruction

SUBJECT: Systems Approach to Learning Visitation

In the week following the NAEB conference in Kansas City, I visited two colleges in Oklahoma and two additional colleges in Michigan to observe advanced methods of education employing the systems approach to learning. Additionally, on October 7 I visited Mt. San Jacinto College near Hemet, California. The colleges selected in Oklahoma, Oklahoma Christian College and the Oral Roberts University, were representative of the institutions that subscribe to the tape-workbook approach using equipment supplied by North Electric Company, Galion, Ohio. North Electric Company has engineered four additional colleges using the same system and equipment.

Oakland Community College, Oakland County, (near Detroit) was engineered by Litton Industries; and the program as well as the installation is operated under a contract with Litton Industries. The fourth college visited was the Henry Ford Community College in Dearborn, Michigan; and this college has a combination of the approaches used in the other schools.

This report will deal with each of the institutions separately with a summary which will include some suggestions for implementing part of the program at the College of San Mateo.

OKLAHOMA CHRISTIAN COLLEGE

Dr. Stafford North,
Dean of Instruction

Oklahoma City, Oklahoma

Oklahoma Christian College is located approximately 14 miles north of Oklahoma City and has a present enrollment of 800 students. The college is designed to go to a maximum of 1,016 students. The school is built around the

concept of a learning center located in the library. This is a new structure completed in 1965 at a cost of one million dollars with the lower floor devoted to the conventional open-stack library and the second and third floors devoted to a learning center. There are presently 508 carrels, each 4 feet by 3-1/2 feet cubicles and "large enough for one student but too small for two."

The college is a residence college with over 80% of the students living in dormitories. There are no facilities for married students, and married students evidently make up a portion of the 20% who live off campus. The school charges $360 tuition each semester with an additional charge of $30 per semester for the carrel rental. Compared to the College of San Mateo, the cost of education at Oklahoma Christian College is $780 as against our per unit of ADA cost of $577.50 (1965-1966). Interestingly, the quoted cost of building the new structure is $11.50 per square foot but the floor vibrates and shakes when students are walking nearby.

A total of 508 carrels are presently in operation, and the literature indicates that it is possible to transmit 136 audio signals to the carrels. Thirty-six programs can be arranged to be used on a schedule, and these are reserved for those tapes that are in heavy demand. Approximately 100 of the 136 programs are designed to start when the student dials the proper sequence of numbers. These programs are set up on 13 four-track and 24 two-track machines; and, therefore, only 37 are available on command. Other listeners must join in-progress lectures. A high speed telephone type dispatching system referred to as a computer searches out the proper machine and turns

the machine on by command from the dial system. The machine automatically turns off 20 seconds after the student signals by an on-off switch, and the tape mechanism rewinds to be ready to start upon the next command.

The tape-workbook systems instruction requires that the instructor make the necessary audio tape and prepare the workbook that accompanies the audio tape. Instructors were informed that they would be paid for the summer providing they developed a course using the tape-workbook approach. Two-thirds of the freshman and one-third of the sophomore courses at Oklahoma Christian College are presently taught by the tape-workbook method. The amount of taped material used varies from course to course, and some teachers report that they believe the most desirable method is to have one section a week on tape and two live sections. The taped material and the listening in the carrels are required and not supplementary. Material available on tape is not repeated in the class lectures. The live sections are small group sections and meet on schedule in conference rooms that hold 10 to 12 students.

The learning center approach assumes that students will do 80% to 90% of their studying in the individual carrels. Students keep their books, papers, pens, etc., in the carrel area; and facilities are available for locking a part of the carrel shelf for security purposes. The approach at Oklahoma Christian College is to provide a more satisfactory place to study than the conventional living area in the dormitory. The learning center is open at 8 o'clock in the morning, and students may study until 10 or 11 o'clock in the evening.

A major advantage is that teachers must prepare adequate workbooks and discover that they can cover a typical 50-minute class lecture without interruptions and digressions in 20 minutes. This permits the teacher to cover more material than in a conventional lecture class.

ORAL ROBERTS UNIVERSITY
Tulsa, Oklahoma

Dr. Paul I, McClendon,
Director of Learning
Resources

The Oral Roberts University was opened in the fall of 1965. It is a non-denominational Christian theological school which will, however, offer the baccalaureate degree in dentistry, medicine, nursing, law, and engineering. Majors are provided in the standard academic subject areas.

The master plan calls for a 50 million dollar investment, and the present campus represents a 10 to 12 million dollar investment.

The Oral Roberts University is oriented to educate the whole man--intellectual, spiritual, and physical. It is a residence university with a present enrollment of 540 students. The tuition cost per student is $900 for two semesters with a total cost of approximately $1,700 per year for room and board. The student-faculty ratio is 11 to 1. Contrasted with the College of San Mateo, our cost per ADA was $577.50 (1965-1966) and the student-faculty ratio is approximately 24 to 1.

The audio equipment at Oral Roberts University is likewise built by North Electric Company, Galion, Ohio; and the video equipment was designed by the Burbank Engineering Department of RCA.

A total of 63 separate audio sources are available by a dial system identical to that used at Oklahoma Christian College. An additional 13 possible sources are available for video and audio; but at the time of my visit, the dialing system for select video signals was not yet operational. The video sources consisted of the following:

3 RCA TR5 VTR record-playback machines

5 motion picture film projectors or 5 slide projectors feeding into the vidicon camera system

2 off-the-air pick-ups using Conrac professional receivers

The retrieval-access of stored audio material is available to the individual by remote random selection from any station and is available at carrels located on several floors of the learning center. The approach is slightly different at Oral Roberts University as compared to Oklahoma Christian College in that students are not assigned to fixed locations for the listening and viewing sessions. If the study material includes video, the student must shift to those carrels that are equipped with video as well as audio.

The instructor may use many approaches to education at Oral Roberts University. Portions of the courses are taught by conventional methods, but special facilities such as rear-view screens are provided to project into four audio auditoria areas. The material projected on the rear-view screen may be motion pictures, slides, or television material via a television projection system. The system as it is used provides a supplementary means of instruction rather than the mainline instructional program. The professor's

conduct of the classes is still within discreet course framework, but the instructor has at his disposal a wide range of equipment and media and is encouraged to make the maximum use of the various media.

The single concept sequence, either audio or video or both, can be used successfully with the system. Such concepts can be developed in brief sequences which students may utilize at any time again and again. The total cost of the installation of each carrel is approximately $300 for the audio portion, $100 for the furniture, and $400 additional for the individual video installation.

The learning resources center contains six levels with space equal to 4-1/2 acres if it were on one level. The center has been called by the Educational Facilities Laboratories of the Ford Foundation "One of the two most creative facilities on any American campus today." Yet one of the obvious drawbacks of the electronic equipment is that the student cannot go back and repeat a portion of the material without listening to the entire lecture a second time. The systems approach at Mt. San Jacinto College in Southern California enables the student to stop at any point to reverse the tape and film strip and to repeat any portion of the material at will, and this is distinctly to the student's advantage.

The Oral Roberts University has, on the other hand, a very favorable student-faculty relationship of 11 to 1 which enables the faculty to meet with students in small groups and to resort to the use of the electronic

medium to present basic facts that are common to the subject matter. Unfortunately, few public schools can afford this student-faculty ratio.

HENRY FORD COMMUNITY COLLEGE

Dr. Arthur J. Elges,
Dean, Technical Education

Dearborn, Michigan

The Henry Ford Community College is using a systems approach that is entirely different from those of Oklahoma Christian College and the Oral Roberts University. Systems instruction has been integrated into various courses by making available tape recorders and slides and film strips, either separately or in combination.

The most unusual approach and use of the systems approach is in the nursing area. In this area, it is easy to identify specific skills required in the nursing program. A mechanized workbook, cartridge tape transport, and a carousel projector assist the instructor in giving the individualized instruction required in the nursing area. For example, certain specific steps must be performed in bathing a bed patient. The steps are outlined in the written instructions given on the mechanized workbook. This machine advances to the new position by push buttons and is designed so that the machine can ask multiple choice or other types of questions and will advance to the next position only after the student has given the correct answer. The cartridge tape transport and the carousel projector are linked to the mechanized workbook so that on command, provided by a series of holes punched on the workbook, the cartridge will present the audio portion and the carousel projector will project the

proper color slide to illustrate the next step. In the program I observed, the student is carried through the complete process of giving a patient a bed bath by informing him of each of the steps that he must perform; and the machine does not advance to the next step until the student presses the button requesting the next part of the process. The entire equipment is placed on a work table next to the bed, and live bed patients are used by the student in progressing from the initial to the final step of the bath routine.

Since all students receive exactly the same instruction, both oral, visual, and in written form, this has distinct advantages over a teacher attempting to go through the entire routine and then have the student follow the routine from memory or from badly written notes. The nursing section was equipped with six complete units that will eventually provide detailed instruction in almost all of the specific job functions required by the nurse.

One disadvantage of the system is that the student cannot reverse either the tape or the slide; and in case of trouble, the teacher has to help the student to get the three pieces of equipment in proper sequence.

OAKLAND COMMUNITY COLLEGE

Bloomfield Hills, Michigan

Dr. Ervin Harlacker,
Vice President

Dr. Bob Branson, Coordinator
Litton Industries
1695 West Cresent Avenue
Anaheim, California 92801

The approach adopted by Oakland Community College is unlike any elsewhere in the United States. There are very few lecture rooms, three on the temporary

campus which houses some 3,500 students; and students are required to attend only one lecture per week in each of the courses. Students are expected on their own to visit the learning laboratories, but no check on the number of hours of attendance in these learning laboratories is required. The student at Oakland Community College pays a yearly tuition fee of $206 and an additional $350 is provided by the state for each full-time equivalent enrollment. Additionally, Oakland Community College levies a 10-cent per $100 assessed evaluation on an assessed evaluation of 2.6 billion dollars. The total income per full-time equivalent enrollment is $556 plus approximately 2.6 million dollars.

The school is an entirely new operation having started in the fall of 1965 with an initial enrollment of approximately 3,500 students. Teachers were selected on the basis of their willingness to use the total teaching laboratory concept and agreed to this system before they were hired. Consequently, the problem of teacher acceptance does not exist at Oakland Community College. A core group of 75 teachers was hired in the spring of 1965 and reported for a two-months' indoctrination period in the summer. They worked with Dr. Bob Branson, Coordinator of Systems Education, Litton Industry, to establish the first course material. An additional group of teachers arrived for the opening of school.

The laboratory portion of the course--the backbone of the systems approach--consists of film strips, audio equipment, slides, motion picture material, and nearly all of the electronic and mechanical devices available in industry at

the present time. Almost every major supplier has equipment at Oakland Community College.

The necessary textbook, lab book, audio-visual aids, equipment, etc., are available to the student in each study lab. In the temporary quarters, a former Niki site, a student-help operated dispensing area is placed in the space between two study laboratories. The laboratory is designed and equipped to take care of students in a particular subject matter. Thus, a laboratory area might be designed for biology and geology; and the laboratory would dispense all textbooks, audio-visual aids, including microscopes if necessary to cover the two fields. Students enrolled in English and typing would proceed in an entirely different area in the college and would find typewriters and the necessary material available for their use in these locations.

Since the student does not register for study laboratories, he is free to roam from one location to the other if necessary. If he finds no vacant spaces in the biology study laboratory, he may move to the English area or the mathematics area as desired.

In exchange for being relieved of the routine lecturing in a classroom, instructors are available in each study work laboratory to answer questions, for group conferences, to counsel students, or to meet in small groups. A portion of each laboratory is equipped with table and chairs for such groups. The groups are generally limited to 8 to 10 students and individual help is available to any student needing such help.

Oakland Community College is in the process of building a new campus which will be designed around the study work laboratory principle. The equipment purchased for use in the temporary quarters is readily movable as no conduits or complex wiring is required to put it into operation. The individualized approach with full faculty cooperation will make this school a most interesting one to watch as it gets into complete operation.

MT. SAN JACINTO COLLEGE

Hemet, California

Dr. Milo Johnson,
Superintendent

Dr. Joseph Bishop,
Director of Instruction

The new Mt. San Jacinto College near Hemet, California, has specialized in the area of the systems approach to learning. However, unlike the colleges that involve audio alone and a complex electronic dialing system, Mt. San Jacinto College utilizes student-operated tape playback equipment and a film strip projector to provide the related visual material. Under the vigorous leadership of Dr. Joseph Bishop, the new faculty at Mt. San Jacinto College was thoroughly indoctrinated in the philosophy of the systems approach to learning. During the first year of operation, a panel of experts in the new systems approach to learning conducted a series of workshops in which the features of the new education were thoroughly explained. Not all courses at Mt. San Jacinto College are taught using the equipment but additional courses are rapidly being added to the program, and eventually most of the work involving remedial work for the required courses for graduation will be available by this medium.

The carrels at Mt. San Jacinto College are similar in size to those used elsewhere, approximately 3-1/2 by 4 feet and accommodate a single student. The tape playback machine, a Rheem Califone AV Series #70-CT, is permanently mounted and is student operated. The Bell & Howell Autoload Projector likewise is a permanent adjunct to the carrel and projects the image on a 10" x 12" white screen.

The student is provided with a complete course outline in which the objectives of the course and each assignment are carefully outlined in terms of what the student is to learn. Each learning session is accompanied by the detailed course outline and instructions. The student checks out the proper audio tape and related film strip cartridge. At some point in the written material, he is instructed to start the audio tape and step-by-step instructions for proceeding through the audio tape and film strip sequence are outlined. The individual instructional sessions are broken down into 20- and 30-minute segments.

The audio material consists of the lecture and other audio aids as required. The visual portion starts with the session title and proceeds with the photograph of the lecturer and the various visual aids, charts, maps, sentences, etc., as required to fit in with the material on the audio tape. A minimum of electronics is employed in this system and the student is instructed to proceed to the next visual frame by manually advancing the projector as designated by a series of tone signals. In order to synchronize the audio and visual material, every fifth frame is identified by a number on the picture and an audio identification likewise by number. It is thus virtually impossible to lose synchronization of the film strip and audio.

The student may advance the tape to any section by fast forward on the tape playback, and he may likewise quickly run through the film strip to the proper location. The tape playback machine may be stopped at any desired spot so that the student has an opportunity to view the visual portion and to make notes as required. The student likewise may reverse the tape machine and the film strip to repeat a sequence as required.

An interesting innovation at Mt. San Jacinto College is the tapes and audio material that were prepared by photographing the video and recording the audio of televised courses broadcast by San Bernardino Valley College. The camera was simply focused on the television screen, and each significant visual action was photographed along with frame numbers. This provides the lecture material for the course in psychology at Mt. San Jacinto College.

The College of San Mateo obviously could adopt this phase of the Mt. San Jacinto College program, and the recorded material with the film strips could be checked out at the library to provide supplementary instruction for each of our presently televised courses.

SUMMARY

The Oakland Community College approach is so foreign to anything that we have done in California that it may not be possible to consider its adoption in toto. Obviously, with the state requirement to check enrollment and attendance in classes, it makes the voluntary work study laboratory approach impossible. Furthermore, the cost of the equipment used by the individual student

will undoubtedly be very much higher than the funds available to purchase such equipment at this college. A further requirement would be that the complete program be geared to the work study laboratory rather than the former class presentation system as it is difficult to see how a portion of the college could be devoted to this innovated system while the rest of the college is on a conventional system.

The individual subject matter audio-video approach used at the Henry Ford Community College is applicable to our school without major modification. The weak link in the Henry Ford Community College system is, I believe, the use of the written program material on a machine that does not permit backing up to repeat the last one or two steps. It is conceivable that program material in book form would be advantageous in this area and the use of audio tape with a reversing mechanism. This would be a conventional tape recorder as the cartridge machines may not satisfactorily be reversed. I believe we should experiment with one or two units in the area of either cosmetology, nursing, or dental assisting, or make the equipment available for anyone in that general area. Later on, this approach might be effectively used in the machine shop and welding areas.

The use of carrels at the College of San Mateo, especially carrels assigned to individual students, is probably out of the question. With a total student body of 8,000, this would require 8,000 separate carrels and an electrical complex that would be exceedingly complicated. Furthermore, with our listening facility in the library, we can increase the use of audio tape by a factor of probably two or three times before we reach the maximum capacity. In other words, our listening area and the tape facilities that we have available will take care of the present needs, and

we can expand our present program without exceeding our capability. The individual carrels provide for seclusion that our listening tables do not provide, but I do not feel that this is a serious handicap to the student.

After my observations at these four highly publicized schools, the system developed by Dr. Joseph Bishop, Mt. San Jacinto College, I believe, is a system that we can institute with a minimum of cost; and the system has certain advantages not found in the more complex systems engineered by North Electrical Company for Oklahoma Christian College and the Oral Roberts University. Namely, with the simpler system, it is possible to reverse the tape, to reverse the film, and to review material just covered. Likewise, it is possible to advance to the middle of the tape and the middle of the film strip in the event that the student does not require the first portion. Finally, the system is adaptable to our present television systems approach in that we are able to produce the film portion by photographing the monitor screen directly and to provide film strip and audio tape for use by students who wish to repeat a lecture or for students who have missed a lecture. The cost of this method of fortifying the television lecture or providing an alternate lecture is a fraction of the cost of providing this on video tape as Oral Roberts University is attempting to do. The further advantage is that we can purchase a small number of film strip projectors and a small number of economical audio tape recorders and do not require the highly complex and expensive computer for random access as used by the Oklahoma colleges.

One of the features of the so-called systems approach to learning is the great care with which the student is made acquainted with the specific bits of

information he must know in order to pass the course. This, for all practical purposes, means that the instructor must organize his course material into identifiable subject matter objectives and must define these in behavioral terms. It must tell the student exactly what he should understand, comprehend, or demonstrate at the end of his course of instruction. Obviously, this has direct application to any courses whether it is taught by completely mechanized methods employed at Oakland Community College or at the College of San Mateo.

Appendix No. 1 is an explanation of the approach used at the learner-centered instructional college. This appendix is a paper that was presented at the National Society for Programmed Instruction, April 16, 1966, St. Louis, Missouri, by Albert A. Canfield, Walter J. Fightmaster, and Alvin E. Ugelow, of Oakland Community College, Bloomfield Hills, Michigan.

APPENDIX NO. 1

A LEARNER-CENTERED INSTRUCTIONAL SYSTEMS APPROACH

by
Albert A. Canfield, Walter J. Fightmaster, Alvin E. Ugelow
Oakland Community College, Bloomfield Hills, Michigan

A Paper Presented at the
National Society for Programmed Instruction
April 16, 1966, St. Louis, Missouri

INSTRUCTIONAL METHOD

An imaginative approach for implementing higher educational programs has been instituted at Oakland Community College. In contrast to conventional instructional approaches, Oakland Community College has attempted to develop an instructional approach which is primarily learner-centered. This Learner-Centered Instructional Program is an outgrowth of the systems approach to education and training in general. The overall concern with human learning, training and educational research fostered after World War II by such organizations as are now represented by the U. S. Army Human Resources Research Office (HumRRo), U. S. Air Force Behavioral Sciences Laboratory, American Institute for Research, and others, has promoted the advancement of the state-of-the-art for educational and training technology. Oakland Community College has recognized these advancements and availed itself of this technology. Developments in programmed learning itself have, of course, influenced the Oakland Community College concept profoundly. Most recently, the work of Dr. S. N. Postlethwaite of the Botany Department at Purdue University has provided a working model (The Audio-Tutorial Method) from which the Instructional Systems Approach at Oakland Community College was initially derived. The Oakland Community College approach has now been modified to the point that the term "Audio-Tutorial" is no longer used.

Although programmed instruction has sometimes been equated with the instructional systems approach, there are, of course, differences between them. However, the major difference is really one of scope of application rather than one of kind. At one level, which we may call the micro-level, one finds the systematically developed and evaluated programmed book, extremely effective and efficient as a teaching medium, but essentially incomplete for anything

like semester-length instruction. At the macro-level, on the other hand, the same systematic development and evaluation can be applied to total course design. Oakland Community College has carried the macro-level concept one step further, and has attempted to apply it, not only to <u>individual</u> course design, but to total curriculum and facility design.

The approach and functional steps involved in the systems definition, design, production and implementation of instruction presently followed at Oakland Community College, incorporates at the macro-level many of the basic features applied to the design of programmed media in general.

1. Terminal Objectives for <u>all</u> courses are identified, and defined in behavioral terms. Terminal Objectives or Terminal Performance Specifications (TPS) - what the student should understand, comprehend or demonstrate knowledge of at the end of his course of instruction - are prepared by each faculty member having responsibility for a course offering. (Table I) Generally, each unit (covering a 1-2 week period) of the course is designed to accomplish a specific TPS. Each unit has a criterion test which is used to evaluate achievement of the TPS by the student.

2. Once the TPS' are documented, attention is given to the identification of the Interim Objectives or the Interim Performance Specifications (IPS) and detailed learning steps. (Table II) These are sequenced meaningfully, and wherever possible, time-based. The IPS' are ordered from the simple to complex or from the unfamiliar to the new as in the micro-programmed book, with an attempt made to assign study times appropriate for achieving them. Since the objectives are made explicit, the most appropriate media can be selected. These range from mimeographed essays with study questions to audio-tapes, integrated text readings, textbooks, journals, magazine and newspaper articles, visual displays, 8mm single-concept films, film strips and 35mm slides,

TABLE I TERMINAL PERFORMANCE SPECIFICATIONS
OAKLAND COMMUNITY COLLEGE
Copyright OCC - 1966

Functional Performance Analysis - A

Course No. 84.251
Course Title General Psychology
Unit No. 2 Unit Title Heredity, Maturation and Adolescence
Unit Description:

Coordinator A. Uselow
Date 1/66

Assessment by the student of the interaction of heredity, maturation, and environmental influences in individual differences. Assignment of relative weights to the effects of early vs. late experience especially in adolescence.

Terminal Performance Specification	Examples of Criterion Questions	Hours Alloted
The student will identify, at the objective test level, the major hereditary, maturational, and environmental determinants of individuality in general and of adolescence in particular. No reference materials will be provided at the time of testing.	1. For each of the instances of behavior or bodily characteristics below, indicate by the appropriate letter, the factor which best accounts for it: (H): the individual's unique and original hereditary make-up (M): the orderly maturational sequence common to all normal humans and different from that of other organisms (E): the presence of a specific environmental influence or demand which may have altered the natural course of events 1.1 The gradual onset of understandable English in infants as opposed to Spanish _____ 1.2 The absence of skin-pigment in a child of parents having normal skin pigment _____ 1.3 The absence of an "instinct of self-preservation" in soldiers who risk their lives _____ 2. Problems of adjustment relating to sexual development, emancipation from home, relations with age-mates, and perception of self are created by _____ changes occurring in adolescence.	14 Hrs.

TABLE II INTERIM PERFORMANCE SPECIFICATIONS
OAKLAND COMMUNITY COLLEGE
Copyright OCC-1966
Functional Performance Analysis - B

Coordinator A. Ugelow
Date 1/66

Course No. 84.251
Course Title General Psychology
Terminal Performance Specifications # 2 : Heredity, Maturation and Adolescence

Interim Performance Specifications		Learning Steps		Criterion Performance Evaluation (Responses)	Media Selection	Time Required
No.		No.				
2.1	The student will recognize that there is an interaction of heredity, maturation and environment.	1.	Identify and define at preview level what heredity, maturation, and learning have to do with individuality.	1. Which of the factors - heredity, maturation, environment - best accounts for the prevalence of musical talent in the Bach family in all probability?	Tape Hand-out Text Reading	2 Hrs.
		2.	Explain the nature - nurture interaction.	2. What effect might the kind of early schooling received by the various Bachs at home have had on their interest in music? Is it still legitimate to ascribe such talent strictly to heredity?	" " Small Assembly	
		3.	Extract one effect of heredity, one of maturation, and one of learning in an instance of achievement by members of an outstanding family.			
2.2	The student will solve simple problems using the dominance and recession tables of heredity.	1.	Define phenotype and genotype.	True or False? 1. The phenotype is the basis for genetic qualities that may or not be displayed while the genotype is the actual trait which is displayed.	Text Reading Hand-out	4 Hrs.
		2.	Distinguish between dominance and recessiveness.	True or False? 2. A person's phenotype reflects one or more dominant genes.		
		3.	Explain sex determination hereditarily by reference to X and Y chromosomes.	3. Diagram the dominance-recession table to show the four possible genotypes which insure that the probability of a boy or girl being born is always 50/50.		
		4.	Distinguish between different organismic characteristics on heredity vs. environment basis.	4. If a boy looks like his father we may say that he has _____ the resemblance, but if he has his father's temper most likely this characteristic was _____.		
	-continued-		-continued-	-continued-	-continued-	-continued-

REW:kes
12/17/65

laboratory experimental set-ups, and, of course, programmed texts. Materials are so constructed or selected to allow for active response by the learner, and immediate feedback to him.

3. An attempt is made to keep the learner aware of what the sequence of instruction will be, in most cases, by furnishing him with a study guide or checklist for each unit of a course. This guide lists the general and intermediate objectives that he will be expected to achieve, (Table III) and the learning steps he must follow. (Table IV) Thus, he is kept informed at each step within a unit of a course what he will be tested on and when, so that he can schedule his time in the learning laboratory - as it is known at Oakland Community College - on a self-paced basis.

4. The overall approach - of stating objectives in behavioral terms, of organizing and sequencing media and study time, of the learner keeping himself informed, and of promoting his active participation in the learning experience - is then evaluated regularly and frequently by calling for the criterion responses appropriate. These are embodied in oral, performance and written tests.

The implementation of all these instructional programmed features at Oakland Community College constitutes a unique Learner-Centered Instructional Systems Approach. Such implementation has resulted in many innovations in the appearance of our facilities, and the conduct of our educational practices. Learners at Oakland Community College follow a self-paced and self-scheduled plan of study in accomplishing most of their program/course requirements.

This has created the need for unique facilities unlike the conventional classrooms. The result has been the Oakland Community College "learning laboratory" which houses study carrels rather than traditional student chair-desks. When needed, laboratories of the more traditional type provide an

TABLE III GENERAL AND INTERMEDIATE OBJECTIVES

OAKLAND COMMUNITY COLLEGE

TITLE: Unit 2, Heredity, Maturation and Adolescence CODE: 84.251.2

GENERAL OBJECTIVE:

The student shall assess the interaction of heredity, maturation, and their interaction with environment in making the individual unique. He shall interpret the special problems of adolescence. He will do so at the objective test level and without the use of reference.

INTERMEDIATE OBJECTIVES:

2.1 The student shall recognize that there is an important interaction of heredity, maturation and environment through learning which means we cannot assign individual differences to either heredity or maturation alone.

2.2 The student shall distinguish phenotype and genotype, dominance and recession and solve simple problems using the dominance and recession table.

2.3 The student shall define maturation and shall trace the maturation of motor responses, sensitivity, and early emotion.

2.4 The student shall identify major areas of environmental influence on the developing child: toilet training and feeding, relations with parents, age-mates and siblings, and schooling.

2.5 The student shall identify the major bodily changes in adolescence and interpret their significance for problems of teen-age having to do with sexual development, independence and emancipation from home, age-mates, and juvenile delinquency.

The first step is to read the above objectives. Then turn the page and perform each step in the sequence indicated.

Copyright OCC-1966

TABLE IV LEARNING STEPS

OAKLAND COMMUNITY COLLEGE

Copyright OCC-1966

CODE	PROGRAM	MEDIA	TIME
2.1	Major Determinants of Individuality	Hand-out Plus	2 hrs.
	1. Obtain Tape 84.251.2. Listen to this tape and take notes if necessary. Return tape when done.	Tape	
	2. Read Section 2.1 and 2.1.1 in your hand-out. Keep Hilgard handy. Refer to p. 433, Fig. 15-5 as directed.	Text	
	3. Do the exercise in Section 2.1.1 of your hand-out. Ask your instructor to schedule a Small Assembly on this exercise if necessary.	Small Assembly	
2.2	Significance of Heredity for Individuality		4 hrs.
	1. In Hilgard, read Chapter 15, pp. 423-425 (middle)	Text	
	2. Read Section 2.2. through 2.2.1 in your hand-out.		
	3. Do the exercise in Section 2.2.2 of your hand-out and read the Conclusion in Section 2.2.3.		
	4. Make note of questions to be taken up at your General Assembly Session.	General Assembly	
2.3	The Concept of Maturation		3 hrs.
	1. In Hilgard, read Chapter 3, pp. 69-74.	Text	
	2. Read Section 2.3 in your hand-out through 2.3.5.		
	3. Do the exercise in Section 2.3.6 of your hand-out and read the Conclusion in Section 2.3.7.		
2.4	Major Environmental Influences in Early Development		1 hr.
	1. Read Section 2.4 through 2.4.3 in your hand-out.		
2.5	Bodily Changes in Adolescence		4 hrs.
	1. Obtain Tape 84.251.2 once more. Locate the section on it entitled "Introduction to Adolescence" (If you need help in finding it see your Instructor). Listen to this tape and take notes it necessary. Return tape when done.	Tape	
	2. Read Section 2.5 in your hand-out.		

OAKLAND COMMUNITY COLLEGE

Copyright OCC-1966

CODE	PROGRAM	MEDIA	TI

3. In Hilgard, read Chapter 4, pp. 102-110 (middle).

4. Do the exercise in your hand-out, Section 2.5.1.

> At the conclusion of this unit you will have your first block test covering Units 1 and 2. Your instructor will announce the date.

AU/kds
1/18/66

opportunity for the student to apply what he has learned to practical problems, and find unique solutions. While in the learning laboratory itself, tutors are available to answer questions and offer other help on a one-to-one basis. If the learners' need is more extensive, individual conference areas adjoin the laboratories.

If at the end of a unit of instruction the student requires individual clarification of an even more extensive nature, or has formulated an individual project which he would like to carry out, or has begun to think about career opportunities, faculty with extensive experience in the student's field of interest can be consulted. An effort is made to see that faculty advisors and laboratory tutors keep scheduled hours to assist the student. Facilities for enriching subject matter, motivating further inquiry, clarifying special issues, allowing group discussion and evaluating the student's progress are also provided. These needs are met in either Small Assembly Sessions (SAS) or large General Assembly Sessions (GAS). In the SAS, 5 to 6 students meet with the tutor for seminar-type discussions and, for example, case-study solving. At the large GAS they meet in groups of 30 or more with an instructor to hear guest speakers, view group movies or take unit quizes or course tests.

The unique specification of the learning experience at Oakland Community College and the availability of extensive course planning and implementation documents will eventually enable public evaluation of our program and has already provided an invaluable opportunity to work cooperatively with commercial firms in the preparation of a portion of our program texts/booklets. The highly detailed performance specifications developed by Oakland Community College are presented to the college's contractors, Litton Industries, (which utilizes the linear instruction programming format) and Howard and Smith,

(which utilizes a tight branching format) to undertake the programming of some 132 unit-length, instructional programmed texts/booklets for some 20 college course areas, based on our unique requirements.

In summary, the application of the Learner-Centered Instructional Systems Approach at Oakland Community College was adapted to reach more students with less instructional personnel, promote the learning of more information with greater comprehension and in less time.